SEQUENCE LISTING

<110> Perera, Ranjan
Rice, Stephen
Eagleton, Clare

<120> Compositions and Methods for the
Modification of Gene Expression

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<150> U.S. No. 10/291,447
<151> 2002-11-08

<150> U.S. No. 60/425,087
<151> 2002-11-08

<150> U.S. No. 10/137,036
<151> 2002-04-30

<150> U.S. No. 09/724,624
<151> 2000-11-28

<150> U.S. No. 09/598,401
<151> 2000-06-20

<150> PCT/NZ00/00018
<151> 2000-02-24

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<151> 1999-03-25

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<222> (1)...(431)

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<221> CAAT_signal
<222> (326)...(333)

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<222> (185)...(191)

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<213> Pinus radiata

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<222> (444)...(451)

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<213> Eucalyptus grandis

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<213> Eucalyptus grandis

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<213> Eucalyptus grandis

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<212> DNA
<213> Eucalyptus grandis

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<212> DNA
<213> Eucalyptus grandis

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<213> Artificial Sequence

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<223> Made in a lab

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<213> Artificial Sequence

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<223> Made in a lab

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<210> 17

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<212> DNA
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<223> Made in a lab

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<210> 19

<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in a lab

<400> 19
tctgcatctt gaaattgaaa tatgactaac g 31

<210> 20
<211> 363
<212> DNA
<213> Eucalyptus grandis

<400> 20
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atgtaagtta catgaaaaaa aaaaaaaagg atagtttgtt ggaagtaatg gagcatttgt 120
attgtgaaat tcacgataga gctaacaaaa ataaaggtag ttggtgggtt aacccagtta 180
aaaaagaaca ataatttgaa gagaggagag agagagagag gaggggggaga gcatttcgat 240
aaattcacta gaaaaaatgc gtgttttagt ataaatgaga gtggaaatag ggccatctag 300
ggaacgatcg atcgcccctg cacccggcca tctggagagt ctgtttatac ttctctccgg 360
ctt 363

<210> 21
<211> 839
<212> DNA
<213> Pinus radiata

<220>
<221> misc_feature
<222> (1)...(839)
<223> n = A,T,C or G

<400> 21
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gttatttttc tcgactatgg ctgacattac tagggctttc gtgctttcat ctgtgttttc 180
ttcccttaat aggtctgtct ctctggaata tttaattttc gtatgtaagt tatgagtagt 240
cgctgtttgt aataggctct tgtctgtaaa ggtttcagca ggtgtttgcg ttttattgcg 300

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tgtggcgttc tgtagtaata ttttaatttt gggcccgggt tctgagggta ggtgattatt 480
cncagtgatg tgctttccct ataaggtcct ctatgtgtaa gctgttaggg tttgtgcgtt 540
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ttttctaatt cgtggattgc tggtgccata ttttatttct attgcaactg tattttaggg 660
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agggtgtctg ccctcttctt ttgtgcttct ttcgcagaat ctgtccgttg gtctgtattt 780
gggtgatgaa ttatttattc cttgaagtat ctgtctaatt agcttgtgat gatgtgcag 839

<210> 22
<211> 881
<212> DNA
<213> Eucalyptus grandis

<400> 22
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gaatggaggt tggcctctct caattacgtg gacgccaatg agataactca ggtgggcgac 120
aaaacaaacg cctcttgatt tcctcaaacc ccaaaccgaa tccctcgtca aggggcaagg 180
cttttggtcc cgcggcccca cggatcgctc gttcccgtct cgccacgtcg cgtcgcagcg 240
tgtcgagcaa acagaggggt ccgagcgact ataaaatccc gacgccatcg acaccacagt 300
ccatcgaaaa ccttgttcaa ttcccaagtg aaagtgagta actgtgaacg aagagttgaa 360
ctttgcatct cggcgtgtgg attcaagagg aagcagcaaa gtggaaatgg acaactccaa 420
gatgggcttc aatgcagggc aggccaaggg ccagactcag gagaagagca accagatgat 480
ggataaggca tccaacactg ctcaatctgc aagggattcc atgcaagaga ctggtcagca 540
gatgaaggcc aaagcccagg gtgctgctga tgcagtgaag aatgccaccg ggatgaacaa 600
atgaagagct caagacatga atgaataaat aattaagctc tggttatcat ttgcttttcc 660
ggtcgtttgt tgtcctgttt ttccttgtca agagcttatt atgagggtcc ttttgctctt 720
tccttagttc tttttgtttc ttggttgttc catgaagaga gcaactctct gtgtttgaga 780
gtactcatct cgcttcataa ggtctcagta tgtagttgcc tttcgagaat gttatgttct 840
ctctcataat gctattctga ttttataaaa aaaaaaaaaa a 881

<210> 23
<211> 350
<212> DNA
<213> Eucalyptus grandis

<400> 23
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tataattttt tttgatataa taaaaatgat ccataaactt ttgcttaatg tgcaacgtaa 120
accataatat attcaacgtg atgcttaaac tttaatcgag tatgcaatgt agtccataat 180
atattcaata tgatccttca atccaattga agtgtgcaat gtggtcgcta gatttttta 240
tgtattcaac ttagtcttta agctaccaac cttccaataa tttatgtttt agaaataata 300
tcgaacatct tttatattat tcaaggaata aaacgaacat gcatcaaaag 350

<210> 24
<211> 49
<212> DNA
<213> Eucalyptus grandis

<400> 24
actatagggc acgcgtggtc gacggcccgg gctggtactt tttttttct 49

<210> 25
<211> 909
<212> DNA
<213> Eucalyptus grandis

<400> 25
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acactcacct tgcatttata cgatggttgt gagcagtgca ggctggtggt gctgcaaatt 120
tatgatgctg atgtgatagg cagatgaatg gcagttgagc taagttaaag ccctcataca 180
tagatcagag caggaggagt agtatatata ggcatcttgg caagtcccta aaagagcggc 240

ttcgtgtatt cccacatatt cctctctcgt tagaacgttc agaaatgggt ggccctttga 300
ctcttgatgc agaggttgag gttaagtctc ctgcagacaa gttctgggtg agcgtgagag 360
actccaccaa actgttccca aagatcttcc cggaccagta caagaatatt gaagtccttg 420
agggagatgg gaaggctcct ggctcagttc gcctcttcac gtatggtgaa ggttctccac 480
ttgttaaagt atcaaaggag aagattgatg gtgtggacga agcagacaag gtcgtgacct 540
acagcgttat agacggtgat ctcctgaagt actacaagaa tttcaatggc agcatcaagg 600
taattcctaa aggagacgga agcttggtga aatggtcgtg tgggtttgag aaggcaagcg 660
atgaaattcc tgatccccac gtaatcaagg acttcgcaat ccagaatttc aaagagcttg 720
atgagttcat cctcaaggca tagatgccgc caatcgtcta tccggatttg cactaaatat 780
caataaaata atgcggagct ggactccgca cttctatatg catctagtat gagagtcccc 840
tgctgtctct gtttgtattc acttgaaggg ttttctatta agctctcttt actgcctccg 900
aaaaaaaaa 909

<210> 26
<211> 430
<212> DNA
<213> Eucalyptus grandis

<400> 26
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tcgatccttc ttctccaatg gctgcgaatt tcgtcattcc gaccaaaatg aaggcttggg 120
tgtaccgtga gcacggaaac gtcgccgacg tattgggatt ggacccggaa ctcaaggtcc 180
ctgaattgca agaaggccaa gtgctggtta aagttcttgc cgcagcgctc aatccagtcg 240
acgccgcgag aatgaagggg gttatcaagc tcccgggctt ttctctaccg gccgtgccag 300
gttacgatct cgccggcgtt gtggtaaagg tgggccgcga agtgaaggag ctcaagatcg 360
gggacgaggt atatggattt atgtttcacg ccaagaaaga cgggacgctg gctgagtacg 420
cagccgtgga 430

<210> 27
<211> 1253
<212> DNA
<213> Eucalyptus grandis

<400> 27
gcttgagata gatcgactga gagatcctag tggaaataga agatttcctg ataccatcga 60
tccattcttc tccaatggct gcgaatttcg tcattccaac caaaatgaag gcttgggtgt 120
accgtgagca cggagacgtc gccaacgtat tgggattgga cccggaactc aaggtccctg 180
aattgcaaga aggccaagtg ctggttaaag ttcttgccgc ggcgctcaat ccaatcgaca 240
ccgcgagagt gaaggggttt atcaagctcc cgggcttttc tctaccggcc gtgccaggtt 300
acgatctcgc cggcgttgtg gtgaaggtgg gccgcgaagt gaaggagctc aaggtcgggg 360
acgaggtata tggatttatg tttcacgcca agaaagacgg gacgctggct gagtacgcag 420
ccgtggaaga gtcgttcttg gctttgaagc ccaagaagct gcgtttcggg gaggctgctt 480
ctctgccggt ggtcattcag accgcctatg gaggccttga aagagctggc ctctctcatg 540
gcaagtccct cctcgtctta ggtggtgctg gtggcgtcgg cacactcata atacagctag 600
ctaaggaagt ttttggtgca tcaagagtag cagctacatc cagcactggg aagctagagt 660
tgttgaagag cttgggtgct gatctggcca ttgactacac caaagtcaac tttgaagacc 720
tcccagaaaa gtttgatgtt gtctacgata cagttgggga aattgagcgg gcagcgaagg 780
ctgtgaagcc aggagggagc atcgtgacga tcgtaaaaca aaacaagaca ttacccccgc 840
ctgctttctt ttttgcagta acttcgaacc gttcgacctt ggagaagttg aagcccttct 900
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ccgtcccatg atacacaaac gagaaagaaa taaagcgtcc acatggatct gccttaatca 1080
cgagtcctta attagtagtc gatggtgctt gctgtttgtc tccgtacatt cagcttctct 1140
ttgcatagta gtttctacat agtgcgtgta gagaagcaag tggatgtaca agtaaaataa 1200
ttacttttc tataaacaat attacaaact caaaaaaaaa aaaaaaaaaa aaa 1253

<210> 28
<211> 99
<212> DNA
<213> Eucalyptus grandis

<400> 28
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cttctccaat ggctgcgaat ttcgtcattc cgaccaaaa 99

<210> 29
<211> 927
<212> DNA
<213> Eucalyptus grandis

<400> 29
cgacgtcgca tgctcccggc cgccatgcgg ccgcgggaat tcgattacta tagggcacgc 60
gtggtcgacg gcccgggctg gtactctcac taattcttta gttttccaat ttagcccctt 120
ctgtaattgc tcatcttctt taccaaattc tctaatttgg ccggcgaagg gctgacaagg 180
gattggtcat gtcaccctca ccaaaggttg ccgaaggtcc ggtgacctca gctgacggcc 240
acctacacca aatctagctc actagcagcc taagcccttc atcaactcta gtgaaaggtt 300
ttgagtattt tttaataaaa aatatttaaa aaatatatag cgagagctca ttacaaaaaa 360
attttaaaaa aaaatctaaa cattacttga actcaaagtg actttataaa gagtttttac 420
caaaggatct tggtttcatc atttgcacta cacccaaaac ccaatttcta agttaaatca 480
aacccactgt ctaatagaga taaggtaaat gttataaacc aaattccaaa attccgaagc 540
actaaatata tttgctgatc ttataatcgc caattgagag ggtctcattc tccaagggat 600
tgtgacatat tagtaattga tagggtctca tccgtaggac tccgactcag ccgcgccacg 660
tgactggatc gctgaacggc gcggaaccag aggagcgtga ttacctaata ttttctccta 720
ccttggcctt gagattgaat ttcagaaaaa gaaaaagaaa aaggaacaac ttcgccgact 780
gttctataaa atgcatgcgc caccccgacc cccacccacg catcacatcc atccagcctc 840
cacgacagac gcataaacac aacacacgtc ggttagagag agagagagag agagagagag 900
agagagagag atgcttggac agttgtc 927

<210> 30
<211> 411
<212> DNA
<213> Eucalyptus grandis

<400> 30
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taccaaaggc tgaaggtatc agaatctaat gcagcttatg taaaagcgcg atcaatttat 120
tgaccccgac gaccttgact ccatacttca cgcctcagct ttgtgttgga tggtcttgac 180
ctctctcacc ctaaaaggta gctcaaaaga atgagacttt ccgtcatact tataaaccga 240
ccaccagcct ctttcacaac cgacatggga caacctcaaa tagaattttt aacaacaccc 300
ttgcacgctc tttctatcca ctttattatg ccatcacatg agcgttttcc acgcgtaaat 360
cggctaccac ccactttcac acggcggcga aacgagaaaa aggtcctacc t 411

<210> 31
<211> 178
<212> DNA
<213> Eucalyptus grandis

<400> 31
cgagtcagca gaaacccagt tacactccgc ccaaacggaa gctaaacctg atgggccata 60
cgatttcttt cactgagcct cttgcttttc ctccggaatc tcacggcacc ggaatgccgg 120
aggaacttgg gaagaaccaa tgatgcctgg tcactgagtg atcgatgaat gcaatagt 178

<210> 32
<211> 178
<212> DNA
<213> Eucalyptus grandis

<400> 32
gtccaatgtc ctgtcaaagg aggaaagatg actatggccc cggcgccggc ggggactgca 60
tgggatttag tatgttgatt gagtacccgt cgccaccacc ttcaagtaaa tcaggagtca 120
gcagaaaccc agtacactcg ccaaacggag ctaaacctga tggccatacg atttcttt 178

<210> 33
<211> 178
<212> DNA
<213> Eucalyptus grandis

<400> 33
gcatgggatt tagtatgttg attgagtacc cgtcgccacc accttcaagt aaatcaggag 60
tcagcagaaa cccagtacac tcgccaaacg gagctaaacc tgatggccat acgatttctt 120
tcactgagcc tcttgctttt cctccggaat ctcacggcac cggaatgccg gaggcaac 178

<210> 34
<211> 1274
<212> DNA
<213> Eucalyptus grandis

<400> 34
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tataattttt tttgatataa taaaaatgat ccataaactt ttgcttaatg tgcaacgtaa 120
accataatat attcaacgtg atgcttaaac tttaatcgag tatgcaatgt agtccataat 180
atattcaata tgatccttca attttaattg aatgtgcaat gtggtcgcta gatttttta 240
tgtattcaac ttagtcttta agctaccaac cttccaataa tttatgttta gaaataatat 300
cgaacatctt ttatattatt caaggaataa aacgaacatg catcaaaagt ttaaatatat 360
caaataaaat aaaattttaa gaattatatt acatattaaa attaaagttc atgattaaat 420
tgaaataaaa taaaaattta aaaatcacgt tgtatgttgt gccgaaacaa aattcagtga 480
cttgtggtgt caattttctt aggtggagct ccacaagcat tgagatggag tgttccttcc 540
gccgaggttt tcattgcgtg gctcaaaacg gtggcgcgtt ttgcacgaca cgagatgcct 600
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ggtttcgtct ccgatgcggc acgtagccta taaatgcgca cgatctcccg gtctgccaat 720
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gaagttctcc tctcttcgcg tcaagatgca aatctttgtg aaaaccctta ctggcaagac 840
aatcaccctc gaggtggaaa gctcggacac agtcgataat gtgaaagcaa aaatccagga 900
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ccctccggac cagcagaggc ttatctttgc tggcaagcag ctggaagatg gccgaacctt 1200
ggccgattat aacattcaga aggagtccac cctccacttg gtgctccgtc tcaagggagg 1260
catgcaaatc tttg 1274

<210> 35
<211> 795
<212> DNA
<213> Eucalyptus grandis

<400> 35
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gagctttagt ttcagtcagc catggccact cacgcagctc ttgctccctc aaccctcccc 120
gccaatgcca agttctctag caagagctcc tctcactcct tccccactca atgcttctct 180
aagaggctcg aggtggcgga attctcaggc cttcgtgctg gatcgtgtgt gacttatgcg 240
aagaatgccg gggagggatc cttcttcgat gctgtggctg ctcagctcac tcccaagact 300
tcagcaccag ctccagctaa gggagagact gtcgctaaac tgaaggtggc aatcaatggt 360
ttcggtcgca ttggtcggaa cttccttaga tgctggcacg ggagaaagaa ctcgcccctt 420
gatgtcattg ttgtcaatga cagcggtggt gtcaaaaatg cttcacattt gctgaagtat 480
gattccatgc tggggacttt caaagctgat gtgaaaattg tggacaatga gaccatcagc 540
gtcgatggga agcccgttaa ggtcgtctct aaccgggacc ctctcaagct cccctgggct 600
gagctcggca tcgacattgt cattgaggga actggagtct tcgtggatgg ccctggtgct 660
ggaaaacata ttcaagctgg tgccaagaaa gttatcatca ctgcaccagc aaaaggcgct 720
gatataccca cctacgtcta tggtgtgaat gagacagatt attcgcatga agttgctaac 780
ataatcagca atgct 795

<210> 36
<211> 1200
<212> DNA
<213> Eucalyptus grandis

<400> 36
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ctatagccga atgtacaaaa tcggcataat gttctataat atagcggact ttacagatga 120
gcattcaaat acgtacgccg tactcgattc ccattcgatt gttcattcat ccgcatgcaa 180
atttcataga gataatatct gtgcacgtcc ttagattaag aacaaccaaa gagtatctgg 240
tggaagtttg aagcatgacc accgaagtca gatggaacaa acaaggtggg tggtggggat 300
atagtggaca aaggaacgag aggtgaatag gaaaaggaga aggcaagatg cgggagatag 360
gatttacgtg gcgagcggcg attgcacgca tggtccaccc caccctcaac ctcaaacttt 420
cgaaaatgca acgggcatca gggtggcgat gaaggagacg atggagatat tgttgctttc 480
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aagctctcct tcaccggtcc gtcgctttct ctcttatctt cttcttctcc ctcctcttct 600
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agagatgggc aaggactatg acgaggccat tgaggctctc aagaaactcc tcagtgagaa 960
gggggacctg aaagccacag cagccgcaaa agtggagcaa ataactgcgg agttgcaaac 1020
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cttcaagaag gagaaatacg acaagaaccc tgctttatat ggtgaactgg caaagcagag 1140
tccaaagttc atggtgtttg cttgctcgga ctcgagagtg tgcccatctc atgtgctgga 1200

<210> 37
<211> 648
<212> DNA
<213> Eucalyptus grandis

<400> 37
cgacggactc ctttcacgat atcgaaacga ggaaacggag gagaagcaga agaaagaaga 60
tgaagaaagg cagatggttg gtgatggatg aaactgtcgg gaagctggga gcttcaggga 120
gttctattta tggggcgaaa caggggaggg gaaaccgaat ttaccaagat gcccttcttg 180
gtgggattgg acatggagct gcacgaccgt cgtcccatca cgaagagtct tgctcttcgg 240
tacacatgca atcgtcggcg aaccgacctt atccgaccgg ttccaagctt gtcctggtaa 300
aaggtttcga accttggaaa aggcttaaga gatgtatcgg tgccttaacc attattccat 360
gttcacataa tatttggccc ggttttcagg tcaattttgg agtagcccgg ttcggttcta 420
gtcccgctcc cgattcaaaa attcattggg aacaaatttt gacactgtct ggtatttttg 480
gtctaagacc ctacccaatt ttagaactgt acacccttgc tttatcccaa aataaaattg 540
tcaattagtc aacttttcac acttgatgat cgattaagta gatggatgac atggtctttt 600
accagcccgg gccgtcgacc acgcgtgccc tatagtgagt cgtattac 648

<210> 38
<211> 288
<212> DNA
<213> Eucalyptus grandis

<400> 38
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agaagtccgt cgacgacaat ggccgagaag agcaaggtcc tgatcatcgg agagaagagc 120
aaggtcctga tcatcggaga gaagagcaag gtcctgatca tcggagagaa gagcagggtc 180
cttatcatcg gagaatcgaa ttcccgcggc cgccatggcg gccgggagca tgcgacgtcg 240
ggcccaattc gccctatagt gagtcgtatt acaattcact ggccgtcg 288

<210> 39
<211> 382
<212> DNA
<213> Eucalyptus grandis

<400> 39
acagcaatct catctgatga ttcttcagtt cggagctcag aggatacatc atctatagct 60
gaattgagct gtgcaatctt ctcggcaagc accttcctcg ttttctgaaa atcatcagat 120
tttaaggtga atccatattt cgcagatggc catgttactg ctacactctc ttcacagcat 180
acatgaagga ggtcacatag caagcataca taggacctca tatacaaata tgacagcaga 240
ccagcccggg ccgtcgacca cgcgtgccct atagtagtag tggggaagga gtgagaggag 300
ctcttgatga ggaatgtcgg cttttcttcc atcagttgat gttccgggtt cctagtcatt 360
atgccgatgg tggccactcc ag 382

<210> 40
<211> 986
<212> DNA
<213> Eucalyptus grandis

<400> 40
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aagtcaagca aatagacata ttatccccac acataatcaa ctatattcat gactggagag 120
gtgctagatg gtatagagtc cctagttatt atttatttt ttgggcccga gaagatcctg 180
atggatctat gctgtttgat actttcagat ttgttttgtc tacagctcaa ataaattagt 240
gcttgggttt tgatatatta tctaatctga tacaagtctt tgtcctggcc aatttttgca 300
gagtttcctg caaaacagtg cactaaagct tccagaggac ctcatgccat gcccaagggc 360
accacctatg atggaacgga gaatcaaacc acagactgaa caggcgttga aatgccccag 420
atgtgattct acaaacacaa aattctgtta ctataacaac tacaatcttt cacaacctcg 480
ccatttctgc aagacctgca ggcgatactg gaccaaagga ggtgccttac gtaacgttcc 540
tgttggtggg ggttgcagaa agaataaacg agccaagcga gcagtagacc atcctgtctc 600
tgctcagaat gaagcatcca cctctgcagc cccaggcaac gaagtacctg accggtctcc 660
ctttgagcca ccatcttcaa aatccattta ctatggggga gaaaacatga acttaaccgg 720
tctccccttt agcagaattc agcaggaccg agctgcattg gcccactgca actcttcttc 780
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<210> 41
<211> 313
<212> DNA
<213> Pinus radiata

<400> 41
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cccaaaaatc tct 313

<210> 42
<211> 713
<212> DNA
<213> Pinus radiata

<400> 42
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tgtgtagaca tctgggtagt tgtagaataa agacggagcc cattaggtga tccaatcgaa 240
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atggtgctcg tcgccacatc gtctgcttgt acttgatggc attcaggatc ctg 713

<210> 43
<211> 28
<212> DNA
<213> Pinus radiata

<400> 43

ccacctcaca tcaataaatt ttatacga 28

<210> 44
<211> 35
<212> DNA
<213> Pinus radiata

<400> 44
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<210> 45
<211> 1729
<212> DNA
<213> Pinus radiata

<400> 45
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<210> 46
<211> 1038
<212> DNA
<213> Pinus radiata

<400> 46
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tcattcatta tataagatca gattcgtatg atatacaggc aaccatagaa acaaccagca 180
aagttactag caggaaatcc aactaggtat catgaagact accaacgcag gctcgataat 240
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gcatcaacta tatcaggtgt atgtgtgtgt tgataaatcc gatgcttcca ctgttattga 840
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taaaaaaaaa aaaaaaaa 1038

<210> 47
<211> 91
<212> DNA
<213> Pinus radiata

<400> 47
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tcctccgaag aattcgatat caagcttatc g 91

<210> 48
<211> 91
<212> DNA
<213> Pinus radiata

<400> 48
gcttttcatc cacactggtg cctcattcat tatataagat cagattcgtg tgatatacag 60
gcaaccatag aaacaaccgg caaagttact a 91

<210> 49
<211> 809
<212> DNA
<213> Pinus radiata

<400> 49
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aaagattctc tctaacaatt acaaatgatt atttttttcc atgagtgttg catgttcgaa 180
cggtctgccc agtctgtgag agagcataga gaaccctccc tgcccaattt gttagagcat 240
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ccaagctgct gcaacgcggt tgagtcagct gggcttcaat gcctctgtct cgtcgttaac 720
ggccctcctt ttccaggggt cgaccgcggc ctcgcaatgc agctgcctgc caaatgccat 780
ctcacccttc ctccctgtaa cagttagtt 809

<210> 50
<211> 428
<212> DNA
<213> Eucalyptus grandis

<400> 50
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aggactaaag ttttccaccc aaatataaat aacaatggaa gtatctgcct tgacatcttg 120
aaggaacagt ggagtcctgc tttgacaatc tccaaggttt tgctctcaat ttgctctttg 180
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gataggggca aatatgagtc cactgcacgg agttggactc agaaatatgc aatgggttaa 300
ctttaaaaac tatatatcag tgatggaact ttatccctaa gttggaatct cttcgaatca 360
atgacttgtt tgcttgtaag aaatgtttcc ttaagataag tggctttcct caaaacttga 420
ttgaagtg 428

<210> 51

<211> 525
<212> DNA
<213> Pinus radiata

<400> 51
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tgcacccaga tcatccgcta aattgggtgc acttttggca atactgctca tagttgcggc 120
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tgaatagcat tctccgattc cgagttggaa acacagacac aatga 525

<210> 52
<211> 1126
<212> DNA
<213> Pinus radiata

<400> 52
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aagacataca taaacacctg cacctaaaag ttataatgat aacatgcata caaccctaca 180
acgtacgtag tcacatgcgg ctagaactta aacccctacc acaaacatag ccacctgcac 240
ccagaagtta taataataac atacatagaa cccttacaat aaaaaaagtt atctccaatg 300
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taaataataa atgattgatt tctctctgca aaaaaaaaaa aaaaaa 1126

<210> 53
<211> 454
<212> DNA
<213> Pinus radiata

<400> 53
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atcagattgt ctatagtact catatattta agtg 454

<210> 54
<211> 335
<212> DNA
<213> Pinus radiata

<400> 54
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tgaatcaata gtgaacaaat ccctctgttt tatatcatat tgatggatta ttcgattttt 240
tggtgacgtg gcgcgaaact gcttttcgaa ctcatggaaa tagtaattgt tataatccat 300
aggcatgaga ttcttgttaa tcgtgcacaa ggttt 335

<210> 55
<211> 336
<212> DNA
<213> Pinus radiata

<400> 55
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aacaaagagc aggcctcctt tttaacaggt gcttct 336

<210> 56
<211> 532
<212> DNA
<213> Pinus radiata

<400> 56
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cgtttttggg gctcccttga agatctcctc ttcatttcgg gatttcctgc cttcgccgcg 120
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<210> 57
<211> 3103
<212> DNA
<213> Eucalyptus grandis

<400> 57
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<210> 58
<211> 326
<212> DNA
<213> Eucalyptus grandis

<400> 58
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atcttggtca agtcctaatt taactatggg gtccagatta gaagcttatc cactatggat 240
taaattaaat caaatgggaa ttaaattaaa ttaaaatcat cgtgcggagg tgcacgagat 300
gcacgagatc cgacggcgca gagcag 326

<210> 59
<211> 311
<212> DNA
<213> Eucalyptus grandis

<400> 59
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gcgaagggct gacaagggat tggtcatgtc accctcacca aaggttgccg aaggtccggt 180
gacctcagct gacggccacc tacaccaaat ctagctcact agcagcctaa gcccttcatc 240
aactctagtg aaaggttttg agtatttttt aataaaaaat atttaaaaaa tatatagcga 300
gagctcatta c 311

<210> 60
<211> 2096
<212> DNA
<213> Eucalyptus grandis

<400> 60

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agtaaccaat gatgcatcat gttgacaaaa aggctgatta gtatgatctt ggagttgttg 180
gtgcaaattt gcaagctgac gatggcccct cagggaaatt aaggcgccaa cccagattgc 240
aaagagcaca aagagcacga tccaaccttt ccttaacaag atcatcacca gatcggccag 300
taagggtaat attaatttaa caaatagctc ttgtaccggg aactccgtat ttctctcact 360
tccataaacc cctgattaat ttggtgggaa agcgacagcc aacccacaaa aggtcagatg 420
tcatcccacg agagagagag agagagagag agagagagag agagttttct ctctatattc 480
tggttcaccg gttggagtca atggcatgcg tgacgaatgt acatattggt gtagggtcca 540
atattttgcg ggagggttgg tgaaccgcaa agttcctata tatcgaacct ccaccaccat 600
acctcacttc aatccccacc atttatccgt tttatttcct ctgctttcct ttgctcgagt 660
ctcgcggaag agagagaaga gaggagagga gagaatgggt tcgaccggat ccgagaccca 720
gatgaccccg acccaagtct cggacgagga ggcgaacctc ttcgccatgc agctggcgag 780
cgcctccgtg ctccccatgg tcctcaaggc cgccatcgag ctcgacctcc tcgagatcat 840
ggccaaggcc gggccgggcg cgttcctctc cccgggggaa gtcgcggccc agctcccgac 900
ccagaacccc gaggcacccg tcatgctcga ccggatcttc cggctgctgg ccagctactc 960
cgtgctcacg tgcaccctcc gcgacctccc cgatggcaag gtcgagcggc tctacggctt 1020
agcgccggtg tgcaagttct tggtcaagaa cgaggacggg gtctccatcg ccgcactcaa 1080

cttgatgaac caggacaaaa tcctcatgga aagctggtat tacctgaaag atgcggtcct 1140
tgaaggcgga atcccattca acaaggcgta cgggatgacc gcgttcgagt atcatggcac 1200
cgacccgcga ttcaacaaga tctttaaccg gggaatgtct gatcactcca ccattactat 1260
gaagaagata ctggaaacat acaagggctt cgagggcctc gagaccgtgg tcgatgtcgg 1320
aggcggcact ggggccgtgc tcagcatgat cgttgccaaa tacccatcaa tgaaagggat 1380
caacttcgac cgccccaacg gattgaagac gccccacccc ttcctggtgt caagcacgtc 1440
ggaggcgaca tgttcgtcag cgttccaaag ggagatgcca ttttcatgaa gtggatatgc 1500
catgactgga gtgacgacca ttgcgcgaag ttcctcaaga actgctacga tgcgcttccc 1560
aacaatggaa aggtgatcgt tgcagagtgc gtactccctg tgtacccaga cacgagccta 1620
gcgaccaaga atgtgatcca catcgactgc atcatgttgg cccacaaccc aggcgggaaa 1680
gagaggacac agaaggagtt cgaggcattg gccaaagggg ccggatttca gggcttccaa 1740
gtcatgtgct gcgctttcgg cactcacgtc atggagttcc tgaagaccgc ttgatctgct 1800
cctctgtggt gatgttcatg gttcttggat ttgaaaggtc gtgaaggagc ccttttctca 1860
cagttggctt cggcatacca agttcttctc ataaaaggaa acaataagaa gcgactgtat 1920
gatggcgcaa gtggaagtta caagatttgt tgttttatgt ctataaagtt ttgagtcttc 1980
tgcatactga tttcacagaa tgtgtaacga aacggcgtat atggatgtgc ctgaatgatg 2040
gaaattgtga tattctgtct tctttttcag taaatcactt cgaacaaaaa aaaaaa 2096

<210> 61
<211> 522
<212> DNA
<213> Eucalyptus grandis

<400> 61
ctaaaacgct aatcctgccc tgcccttccc ttctgctgct gctgctcgtc acctctctct 60
ccctctcgcg gccagctgcg agatctgccg agtttaagcc tcgtacatca aaatgggtaa 120
ggagaagatt cacatcagca ttgtggtcat tggccatgtc gattctggga agtcaaccac 180
aactggccac ttgatataca agctcggagg aatcgacaag cgtgtgattg agagattcga 240
gaaggaagct gctgagatga acaagagatc gttcaagtat gcttgggtgc ttgacaagct 300
caaggccgag cgcgagcgcg gtattaccat tgatattgcc ttgtggaagt tcgagaccac 360
caagtactac tgcactgtca ttgatgctcc tggacatcgt gactttatta agaatatgat 420
tactggaacc tcccaggccg actgtgctgt ccttatcatt gattccacca ctggtggttt 480
cgaagctggt atttccaagg atggccagac ccgtgaacat gc 522

<210> 62
<211> 420
<212> DNA
<213> Eucalyptus grandis

<400> 62
tttgatacgc taacaaacaa aacatgtgaa aagcttaatt atggcaatta tcataaatag 60
aaaaaaatta gaaaaaaaga gaggaaatgg gccattattt aaattgcaat cgaaagattg 120
agggcaattc tgtttctcta gtgtaaataa gggtgtattt aataattgag ggatggaaat 180
agcatggtca ctcggtaatt atcaaggaaa gcaagaataa aaatggaaaa aaaaaaaaaa 240

aaagcttgaa gaggccaatg tcgaaattat gagcgcgaga tgaggacact cctgggaaac 300
gaaaaatggc attcgcgggg ggtgctatat aaagcctcgt gtaagggtgc gttcctcact 360
ctcaaaccct aatcctgccc ttcccttctg ctgctgctgc tcgtcacctc tctcctccct 420

<210> 63
<211> 65
<212> PRT
<213> Eucalyptus grandis

<400> 63
Met Asp Asn Ser Lys Met Gly Phe Asn Ala Gly Gln Ala Lys Gly Gln
 1   5   10   15
Thr Gln Glu Lys Ser Asn Gln Met Met Asp Lys Ala Ser Asn Thr Ala
            20   25   30
Gln Ser Ala Arg Asp Ser Met Gln Glu Thr Gly Gln Gln Met Lys Ala
        35   40   45
Lys Ala Gln Gly Ala Ala Asp Ala Val Lys Asn Ala Thr Gly Met Asn
    50   55   60
Lys
65

<210> 64
<211> 152
<212> PRT
<213> Eucalyptus grandis

<400> 64
Met Gly Gly Pro Leu Thr Leu Asp Ala Glu Val Glu Val Lys Ser Pro
 1   5   10   15
Ala Asp Lys Phe Trp Val Ser Val Arg Asp Ser Thr Lys Leu Phe Pro
            20   25   30
Lys Ile Phe Pro Asp Gln Tyr Lys Asn Ile Glu Val Leu Glu Gly Asp
        35   40   45
Gly Lys Ala Pro Gly Ser Val Arg Leu Phe Thr Tyr Gly Glu Gly Ser
    50   55   60
Pro Leu Val Lys Val Ser Lys Glu Lys Ile Asp Gly Val Asp Glu Ala
65   70   75   80
Asp Lys Val Val Thr Tyr Ser Val Ile Asp Gly Asp Leu Leu Lys Tyr
                85   90   95
Tyr Lys Asn Phe Asn Gly Ser Ile Lys Val Ile Pro Lys Gly Asp Gly
            100   105   110
Ser Leu Val Lys Trp Ser Cys Gly Phe Glu Lys Ala Ser Asp Glu Ile
        115   120   125
Pro Asp Pro His Val Ile Lys Asp Phe Ala Ile Gln Asn Phe Lys Glu
    130   135   140
Leu Asp Glu Phe Ile Leu Lys Ala
145   150

<210> 65
<211> 117
<212> PRT
<213> Eucalyptus grandis

<400> 65
Met Ala Ala Asn Phe Val Ile Pro Thr Lys Met Lys Ala Trp Val Tyr
 1   5   10   15
Arg Glu His Gly Asn Val Ala Asp Val Leu Gly Leu Asp Pro Glu Leu
            20   25   30
Lys Val Pro Glu Leu Gln Glu Gly Gln Val Leu Val Lys Val Leu Ala
        35   40   45
Ala Ala Leu Asn Pro Val Asp Ala Ala Arg Met Lys Gly Val Ile Lys
    50   55   60
Leu Pro Gly Phe Ser Leu Pro Ala Val Pro Gly Tyr Asp Leu Ala Gly

65 70 75 80
Val Val Val Lys Val Gly Arg Glu Val Lys Glu Leu Lys Ile Gly Asp
85 90 95
Glu Val Tyr Gly Phe Met Phe His Ala Lys Lys Asp Gly Thr Leu Ala
100 105 110
Glu Tyr Ala Ala Val
115

<210> 66
<211> 318
<212> PRT
<213> Eucalyptus grandis

<400> 66
Met Ala Ala Asn Phe Val Ile Pro Thr Lys Met Lys Ala Trp Val Tyr
1 5 10 15
Arg Glu His Gly Asp Val Ala Asn Val Leu Gly Leu Asp Pro Glu Leu
20 25 30
Lys Val Pro Glu Leu Gln Glu Gly Gln Val Leu Val Lys Val Leu Ala
35 40 45
Ala Ala Leu Asn Pro Ile Asp Thr Ala Arg Val Lys Gly Val Ile Lys
50 55 60
Leu Pro Gly Phe Ser Leu Pro Ala Val Pro Gly Tyr Asp Leu Ala Gly
65 70 75 80
Val Val Val Lys Val Gly Arg Glu Val Lys Glu Leu Lys Val Gly Asp
85 90 95
Glu Val Tyr Gly Phe Met Phe His Ala Lys Lys Asp Gly Thr Leu Ala
100 105 110
Glu Tyr Ala Ala Val Glu Glu Ser Phe Leu Ala Leu Lys Pro Lys Lys
115 120 125
Leu Arg Phe Gly Glu Ala Ala Ser Leu Pro Val Val Ile Gln Thr Ala
130 135 140
Tyr Gly Gly Leu Glu Arg Ala Gly Leu Ser His Gly Lys Ser Leu Leu
145 150 155 160
Val Leu Gly Gly Ala Gly Gly Val Gly Thr Leu Ile Ile Gln Leu Ala
165 170 175
Lys Glu Val Phe Gly Ala Ser Arg Val Ala Ala Thr Ser Ser Thr Gly
180 185 190
Lys Leu Glu Leu Leu Lys Ser Leu Gly Ala Asp Leu Ala Ile Asp Tyr
195 200 205
Thr Lys Val Asn Phe Glu Asp Leu Pro Glu Lys Phe Asp Val Val Tyr
210 215 220
Asp Thr Val Gly Glu Ile Glu Arg Ala Ala Lys Ala Val Lys Pro Gly
225 230 235 240
Gly Ser Ile Val Thr Ile Val Lys Gln Asn Lys Thr Leu Pro Pro Pro
245 250 255
Ala Phe Phe Phe Ala Val Thr Ser Asn Arg Ser Thr Leu Glu Lys Leu
260 265 270
Lys Pro Phe Leu Glu Ser Gly Lys Val Lys Pro Val Ile Asp Pro Lys
275 280 285
Ser Pro Phe Pro Phe Ser Gln Ala Ile Glu Ala Phe Ser Tyr Leu Gln
290 295 300
Thr Arg Arg Ala Thr Gly Lys Leu Val Ile His Pro Val Pro
305 310 315

<210> 67
<211> 156
<212> PRT
<213> Eucalyptus grandis

<400> 67
Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
1 5 10 15

```
Val Glu Ser Ser Asp Thr Val Asp Asn Val Lys Ala Lys Ile Gln Asp
            20                  25                  30
Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys
        35                  40                  45
Gln Leu Glu Asp Gly Arg Thr Leu Ala Asp Tyr Asn Ile Gln Lys Glu
    50                  55                  60
Ser Thr Leu His Leu Val Leu Arg Leu Arg Gly Gly Met Gln Ile Phe
65                  70                  75                  80
Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu Val Glu Ser Ser
                85                  90                  95
Asp Thr Val Asp Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile
            100                 105                 110
Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys Gln Leu Glu Asp
        115                 120                 125
Gly Arg Thr Leu Ala Asp Tyr Asn Ile Gln Lys Glu Ser Thr Leu His
    130                 135                 140
Leu Val Leu Arg Leu Lys Gly Gly Met Gln Ile Phe
145                 150                 155

<210> 68
<211> 238
<212> PRT
<213> Eucalyptus grandis

<400> 68
Met Ala Thr His Ala Ala Leu Ala Pro Ser Thr Leu Pro Ala Asn Ala
 1               5                  10                  15
Lys Phe Ser Ser Lys Ser Ser Ser His Ser Phe Pro Thr Gln Cys Phe
            20                  25                  30
Ser Lys Arg Leu Glu Val Ala Glu Phe Ser Gly Leu Arg Ala Gly Ser
        35                  40                  45
Cys Val Thr Tyr Ala Lys Asn Ala Gly Glu Gly Ser Phe Phe Asp Ala
    50                  55                  60
Val Ala Ala Gln Leu Thr Pro Lys Thr Ser Ala Pro Ala Pro Ala Lys
65                  70                  75                  80
Gly Glu Thr Val Ala Lys Leu Lys Val Ala Ile Asn Gly Phe Gly Arg
                85                  90                  95
Ile Gly Arg Asn Phe Leu Arg Cys Trp His Gly Arg Lys Asn Ser Pro
            100                 105                 110
Leu Asp Val Ile Val Val Asn Asp Ser Gly Gly Val Lys Asn Ala Ser
        115                 120                 125
His Leu Leu Lys Tyr Asp Ser Met Leu Gly Thr Phe Lys Ala Asp Val
    130                 135                 140
Lys Ile Val Asp Asn Glu Thr Ile Ser Val Asp Gly Lys Pro Val Lys
145                 150                 155                 160
Val Val Ser Asn Arg Asp Pro Leu Lys Leu Pro Trp Ala Glu Leu Gly
                165                 170                 175
Ile Asp Ile Val Ile Glu Gly Thr Gly Val Phe Val Asp Gly Pro Gly
            180                 185                 190
Ala Gly Lys His Ile Gln Ala Gly Ala Lys Lys Val Ile Ile Thr Ala
        195                 200                 205
Pro Ala Lys Gly Ala Asp Ile Pro Thr Tyr Val Tyr Gly Val Asn Glu
    210                 215                 220
Thr Asp Tyr Ser His Glu Val Ala Asn Ile Ile Ser Asn Ala
225                 230                 235

<210> 69
<211> 168
<212> PRT
<213> Eucalyptus grandis

<400> 69
Met Ser Thr Ser Pro Val Ser Ser Trp Cys Ala Thr Ser Phe Ser Pro
```

```
 1               5                  10                  15
Ala His Ser Ser Leu Lys Arg Ala Ala Gly Leu Arg Pro Ser Leu Ser
            20                  25                  30
Ala Arg Leu Gly Pro Ser Ser Ser Ser Ser Ser Val Ser Pro Pro Thr
        35                  40                  45
Leu Ile Arg Asn Glu Pro Val Phe Ala Ala Pro Ala Pro Val Ile Asn
    50                  55                  60
Pro Thr Trp Thr Glu Glu Met Gly Lys Asp Tyr Asp Glu Ala Ile Glu
65                  70                  75                  80
Ala Leu Lys Lys Leu Leu Ser Glu Lys Gly Asp Leu Lys Ala Thr Ala
                85                  90                  95
Ala Ala Lys Val Glu Gln Ile Thr Ala Glu Leu Gln Thr Ala Ser Pro
            100                 105                 110
Asp Ile Lys Pro Ser Ser Ser Val Asp Arg Ile Lys Thr Gly Phe Thr
        115                 120                 125
Phe Phe Lys Lys Glu Lys Tyr Asp Lys Asn Pro Ala Leu Tyr Gly Glu
    130                 135                 140
Leu Ala Lys Gln Ser Pro Lys Phe Met Val Phe Ala Cys Ser Asp Ser
145                 150                 155                 160
Arg Val Cys Pro Ser His Val Leu
                165
```

<210> 70
<211> 214
<212> PRT
<213> Eucalyptus grandis

<400> 70

```
Met Pro Cys Pro Arg Ala Pro Pro Met Met Glu Arg Arg Ile Lys Pro
 1               5                  10                  15
Gln Thr Glu Gln Ala Leu Lys Cys Pro Arg Cys Asp Ser Thr Asn Thr
            20                  25                  30
Lys Phe Cys Tyr Tyr Asn Asn Tyr Asn Leu Ser Gln Pro Arg His Phe
        35                  40                  45
Cys Lys Thr Cys Arg Arg Tyr Trp Thr Lys Gly Gly Ala Leu Arg Asn
    50                  55                  60
Val Pro Val Gly Gly Gly Cys Arg Lys Asn Lys Arg Ala Lys Arg Ala
65                  70                  75                  80
Val Asp His Pro Val Ser Ala Gln Asn Glu Ala Ser Thr Ser Ala Ala
                85                  90                  95
Pro Gly Asn Glu Val Pro Asp Arg Ser Pro Phe Glu Pro Pro Ser Ser
            100                 105                 110
Lys Ser Ile Tyr Tyr Gly Gly Glu Asn Met Asn Leu Thr Gly Leu Pro
        115                 120                 125
Phe Ser Arg Ile Gln Gln Asp Arg Ala Ala Leu Ala His Cys Asn Ser
    130                 135                 140
Ser Ser Phe Leu Gly Met Ser Cys Gly Thr Gln Ser Ala Ser Leu Glu
145                 150                 155                 160
Pro His Leu Ser Ala Leu Asn Thr Phe Asn Ser Phe Lys Ser Asn Asn
                165                 170                 175
Pro Gly Leu Asp Phe Pro Ser Leu Ser Thr Asp Gln Asn Ser Leu Phe
            180                 185                 190
Glu Thr Ser Gln Pro Gln Leu Ser Arg Ala Met Ala Ser Ala Leu Phe
        195                 200                 205
Ser Met Pro Met Ala Pro
    210
```

<210> 71
<211> 166
<212> PRT
<213> Pinus radiata

<400> 71

```
Met Ala Ala Leu Ala Thr Thr Glu Val Cys Asp Thr Tyr Pro Arg Leu
 1               5                  10                  15
Val Glu Asn Gly Glu Leu Arg Val Leu Gln Pro Ile Phe Gln Ile Tyr
            20                  25                  30
Gly Arg Arg Arg Ala Phe Ser Gly Pro Ile Val Thr Leu Lys Val Phe
        35                  40                  45
Glu Asp Asn Val Leu Leu Arg Glu Phe Leu Glu Glu Arg Gly Asn Gly
    50                  55                  60
Arg Val Leu Val Val Asp Gly Gly Gly Ser Leu Arg Cys Ala Ile Leu
65                  70                  75                  80
Gly Gly Asn Val Val Val Ser Ala Gln Asn Asn Gly Trp Ser Gly Ile
                85                  90                  95
Ile Val Thr Gly Cys Ile Arg Asp Val Asp Glu Ile Asn Arg Cys Asp
            100                 105                 110
Ile Gly Ile Arg Ala Leu Thr Ser Asn Pro Leu Lys Ala Asn Lys Lys
        115                 120                 125
Gly Val Gly Glu Lys His Ala Pro Ile Tyr Ile Ala Gly Thr Arg Ile
    130                 135                 140
Leu Pro Gly Glu Trp Cys Tyr Ala Asp Ser Asp Gly Ile Leu Val Ser
145                 150                 155                 160
Gln Gln Glu Leu Ser Leu
                165
```

<210> 72
<211> 236
<212> PRT
<213> Pinus radiata

<400> 72

```
Met Leu Val Leu Ile Ile Phe Gly Cys Cys Phe Ile Gly Val Ile Ala
 1               5                  10                  15
Thr Ser Phe Asp Phe Tyr Tyr Phe Val Gln Gln Trp Pro Gly Ser Tyr
            20                  25                  30
Cys Asp Thr Arg Arg Gly Cys Cys Tyr Pro Arg Thr Gly Arg Pro Ala
        35                  40                  45
Ser Glu Phe Ser Ile His Gly Leu Trp Pro Asn Tyr Lys Thr Gly Lys
    50                  55                  60
Trp Pro Gln Phe Cys Gly Ser Ser Glu Glu Phe Asp Tyr Ser Lys Ile
65                  70                  75                  80
Ser Asp Leu Glu Glu Glu Leu Asn Arg Tyr Trp Gly Ser Leu Ser Cys
                85                  90                  95
Pro Ser Ser Asp Gly Gln Glu Phe Trp Gly His Glu Trp Glu Lys His
            100                 105                 110
Gly Thr Cys Ser Leu Asn Leu Asp Glu His Ser Tyr Phe Glu Lys Ala
        115                 120                 125
Leu Ser Leu Arg Gln Asn Ile Asp Ile Leu Gly Ala Leu Lys Thr Ala
    130                 135                 140
Gly Ile Lys Pro Asp Gly Ser Gln Tyr Ser Leu Ser Asp Ile Lys Glu
145                 150                 155                 160
Ala Ile Lys Gln Asn Thr Gly Gln Leu Pro Gly Ile Asp Cys Asn Thr
                165                 170                 175
Ser Ala Glu Gly Glu His Gln Leu Tyr Gln Val Tyr Val Cys Val Asp
            180                 185                 190
Lys Ser Asp Ala Ser Thr Val Ile Glu Cys Pro Ile Tyr Pro His Ser
        195                 200                 205
Asn Cys Pro Ser Met Val Val Phe Pro Pro Phe Gly Glu Asp Gln Glu
    210                 215                 220
Asp Arg Asp Gly Tyr Thr Glu Gly Met Tyr Glu Leu
225                 230                 235
```

<210> 73
<211> 92
<212> PRT

<213> Pinus radiata

<400> 73
Met Ala Ala Pro Arg Ser Ser Ala Lys Leu Gly Ala Leu Leu Ala Ile
 1   5   10   15
Leu Leu Ile Val Ala Ala Ala Gln Ala Gln Asp Cys Ser Asn Ala Met
            20   25   30
Asp Lys Leu Ala Pro Cys Thr Ser Ala Val Gly Leu Ser Ser Asn Gly
        35   40   45
Val Lys Pro Ser Ser Glu Cys Cys Asp Ala Leu Lys Gly Thr Ser Thr
    50   55   60
Gly Cys Val Cys Lys Ser Val Arg Ala Val Ile Ser Leu Pro Ala Lys
65   70   75   80
Cys Asn Leu Pro Ala Ile Thr Cys Ser Gly Ser Arg
                85   90

<210> 74
<211> 92
<212> PRT
<213> Pinus radiata

<400> 74
Met Ala Ala Pro Arg Ser Ser Ala Lys Ser Ala Ala Leu Phe Ala Ile
 1   5   10   15
Leu Leu Ile Val Ala Ala Val Gln Ala Glu Asp Cys Ser Asn Ala Met
            20   25   30
Asp Lys Leu Ala Pro Cys Thr Ser Ala Val Gly Leu Ser Ser Asn Gly
        35   40   45
Val Lys Pro Ser Ser Glu Cys Cys Asp Ala Leu Lys Gly Thr Ser Thr
    50   55   60
Gly Cys Val Cys Lys Ser Val Arg Ala Val Ile Ser Leu Pro Ala Lys
65   70   75   80
Cys Asn Leu Pro Ala Leu Thr Cys Ser Gly Ser Arg
                85   90

<210> 75
<211> 92
<212> PRT
<213> Pinus radiata

<400> 75
Met Ala Ala Pro Arg Ser Ser Ala Lys Leu Gly Ala Leu Leu Ala Ile
 1   5   10   15
Leu Leu Ile Val Ala Ala Ala Gln Ala Gln Asp Cys Ser Asn Ala Met
            20   25   30
Asp Lys Leu Ala Pro Cys Thr Ser Ala Val Gly Leu Ser Ser Asn Gly
        35   40   45
Val Lys Pro Ser Ser Glu Cys Cys Asp Ala Leu Lys Gly Thr Ser Thr
    50   55   60
Gly Cys Val Cys Lys Ser Val Arg Ala Val Ile Ser Leu Pro Ala Lys
65   70   75   80
Cys Asn Leu Pro Ala Ile Thr Cys Ser Gly Ser Arg
                85   90

<210> 76
<211> 125
<212> PRT
<213> Eucalyptus grandis

<400> 76
Met Ala Asp Arg Met Leu Thr Arg Ser His Ser Leu Arg Glu Arg Leu
 1   5   10   15
Asp Glu Thr Leu Ser Ala His Arg Asn Asp Ile Val Ala Phe Leu Ser

```
            20                  25                  30
Arg Val Glu Ala Lys Gly Lys Gly Ile Leu Gln Arg His Gln Ile Phe
        35                  40                  45
Ala Glu Phe Glu Ala Ile Ser Glu Glu Ser Arg Ala Lys Leu Leu Asp
    50                  55                  60
Gly Ala Phe Gly Glu Val Leu Lys Ser Thr Gln Glu Ala Ile Val Ser
65                  70                  75                  80
Pro Pro Trp Val Ala Leu Ala Val Arg Pro Arg Pro Gly Val Trp Glu
                85                  90                  95
His Ile Arg Val Asn Val His Ala Leu Val Leu Glu Gln Leu Glu Val
            100                 105                 110
Ala Glu Tyr Leu His Phe Lys Glu Glu Leu Ala Asp Gly
        115                 120                 125

<210> 77
<211> 805
<212> PRT
<213> Eucalyptus grandis

<400> 77
Met Ala Asp Arg Met Leu Thr Arg Ser His Ser Leu Arg Glu Arg Leu
 1               5                  10                  15
Asp Glu Thr Leu Ser Ala His Arg Asn Asp Ile Val Ala Phe Leu Ser
            20                  25                  30
Arg Val Glu Ala Lys Gly Lys Gly Ile Leu Gln Arg His Gln Ile Phe
        35                  40                  45
Ala Glu Phe Glu Ala Ile Ser Glu Glu Ser Arg Ala Lys Leu Leu Asp
    50                  55                  60
Gly Ala Phe Gly Glu Val Leu Lys Ser Thr Gln Glu Ala Ile Val Ser
65                  70                  75                  80
Pro Pro Trp Val Ala Leu Ala Val Arg Pro Arg Pro Gly Val Trp Glu
                85                  90                  95
His Ile Arg Val Asn Val His Ala Leu Val Leu Glu Gln Leu Glu Val
            100                 105                 110
Ala Glu Tyr Leu His Phe Lys Glu Glu Leu Ala Asp Gly Ser Leu Asn
        115                 120                 125
Gly Asn Phe Val Leu Glu Leu Asp Phe Glu Pro Phe Thr Ala Ser Phe
    130                 135                 140
Pro Arg Pro Thr Leu Ser Lys Ser Ile Gly Asn Gly Val Glu Phe Leu
145                 150                 155                 160
Asn Arg His Leu Ser Ala Lys Leu Phe His Asp Lys Glu Ser Leu His
                165                 170                 175
Pro Leu Leu Glu Phe Leu Gln Val His Cys Tyr Lys Gly Lys Asn Met
            180                 185                 190
Met Val Asn Ala Arg Ile Gln Asn Val Phe Ser Leu Gln His Val Leu
        195                 200                 205
Arg Lys Ala Glu Glu Tyr Leu Thr Ser Leu Lys Pro Glu Thr Pro Tyr
    210                 215                 220
Ser Gln Phe Glu His Lys Phe Gln Glu Ile Gly Leu Glu Arg Gly Trp
225                 230                 235                 240
Gly Asp Thr Ala Glu Arg Val Leu Glu Met Ile Gln Leu Leu Leu Asp
                245                 250                 255
Leu Leu Glu Ala Pro Asp Pro Cys Thr Leu Glu Lys Phe Leu Asp Arg
            260                 265                 270
Val Pro Met Val Phe Asn Val Val Ile Met Ser Pro His Gly Tyr Phe
        275                 280                 285
Ala Gln Asp Asp Val Leu Gly Tyr Pro Asp Thr Gly Gly Gln Val Val
    290                 295                 300
Tyr Ile Leu Asp Gln Val Arg Ala Leu Glu Glu Glu Met Leu His Arg
305                 310                 315                 320
Ile Lys Gln Gln Gly Leu Asp Ile Thr Pro Arg Ile Leu Ile Ile Thr
                325                 330                 335
Arg Leu Leu Pro Asp Ala Val Gly Thr Thr Cys Gly Gln Arg Leu Glu
```

```
            340                 345                 350
Lys Val Phe Gly Thr Glu Tyr Ser His Ile Leu Arg Val Pro Phe Arg
        355                 360                 365
Asn Glu Lys Gly Val Val Arg Lys Trp Ile Ser Arg Phe Glu Val Trp
    370                 375                 380
Pro Tyr Leu Glu Arg Tyr Thr Glu Asp Val Ala Ser Glu Leu Ala Gly
385                 390                 395                 400
Glu Leu Gln Gly Lys Pro Asp Leu Ile Ile Gly Asn Tyr Ser Asp Gly
                405                 410                 415
Asn Ile Val Ala Ser Leu Leu Ala His Lys Leu Gly Val Thr Gln Cys
            420                 425                 430
Thr Ile Ala His Ala Leu Glu Lys Thr Lys Tyr Pro Glu Ser Asp Ile
        435                 440                 445
Tyr Trp Lys Lys Phe Glu Glu Lys Tyr His Phe Ser Cys Gln Phe Thr
    450                 455                 460
Ala Asp Leu Ile Ala Met Asn His Thr Asp Phe Ile Ile Thr Ser Thr
465                 470                 475                 480
Phe Gln Glu Ile Ala Gly Ser Lys Asp Thr Val Gly Gln Tyr Glu Ser
                485                 490                 495
His Met Asn Phe Thr Leu Pro Gly Leu Tyr Arg Val Val His Gly Ile
            500                 505                 510
Asp Val Phe Asp Pro Lys Phe Asn Ile Val Ser Pro Gly Ala Asp Met
        515                 520                 525
Ser Ile Tyr Phe Ala Tyr Thr Glu Gln Glu Arg Arg Leu Lys Ser Phe
    530                 535                 540
His Pro Glu Ile Glu Glu Leu Leu Phe Ser Asp Val Glu Asn Lys Glu
545                 550                 555                 560
His Leu Cys Val Leu Lys Asp Lys Lys Lys Pro Ile Ile Phe Thr Met
                565                 570                 575
Ala Arg Leu Asp Arg Val Lys Asn Leu Thr Gly Leu Val Glu Trp Tyr
            580                 585                 590
Gly Lys Asn Ser Lys Leu Arg Glu Leu Ala Asn Leu Val Val Val Gly
        595                 600                 605
Gly Asp Arg Arg Lys Asp Ser Lys Asp Leu Glu Glu Gln Ser Glu Met
    610                 615                 620
Lys Lys Met Tyr Asp Leu Ile Glu Lys Tyr Lys Leu Asn Gly Gln Phe
625                 630                 635                 640
Arg Trp Ile Ser Ser Gln Met Asn Arg Val Arg Asn Gly Glu Leu Tyr
                645                 650                 655
Arg Tyr Ile Cys Asp Thr Lys Gly Val Phe Val Gln Pro Ala Ile Tyr
            660                 665                 670
Glu Ala Phe Gly Leu Thr Val Val Glu Ala Met Thr Cys Gly Leu Pro
        675                 680                 685
Thr Phe Ala Thr Cys Asn Gly Gly Pro Ala Glu Ile Ile Val His Gly
    690                 695                 700
Lys Ser Gly Tyr His Ile Asp Pro Tyr His Gly Asp Gln Ala Ala Glu
705                 710                 715                 720
Leu Leu Val Asp Phe Phe Asn Lys Cys Lys Ile Asp Gln Ser His Trp
                725                 730                 735
Asp Glu Ile Ser Lys Gly Ala Met Gln Arg Ile Glu Glu Lys Tyr Thr
            740                 745                 750
Trp Lys Ile Tyr Ser Glu Arg Leu Leu Asn Leu Thr Ala Val Tyr Gly
        755                 760                 765
Phe Trp Lys His Val Thr Asn Leu Asp Arg Arg Glu Ser Arg Arg Tyr
    770                 775                 780
Leu Glu Met Phe Tyr Ala Leu Lys Tyr Arg Pro Leu Ala Gln Ser Val
785                 790                 795                 800
Pro Pro Ala Val Glu
                805
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<210> 78
<211> 264
<212> PRT

<213> Eucalyptus grandis

<400> 78

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Asp Glu Glu Ala Asn Leu Phe Ala Met Gln Leu Ala Ser Ala Ser Val
            20                  25                  30
Leu Pro Met Val Leu Lys Ala Ala Ile Glu Leu Asp Leu Leu Glu Ile
        35                  40                  45
Met Ala Lys Ala Gly Pro Gly Ala Phe Leu Ser Pro Gly Glu Val Ala
    50                  55                  60
Ala Gln Leu Pro Thr Gln Asn Pro Glu Ala Pro Val Met Leu Asp Arg
65                  70                  75                  80
Ile Phe Arg Leu Leu Ala Ser Tyr Ser Val Leu Thr Cys Thr Leu Arg
                85                  90                  95
Asp Leu Pro Asp Gly Lys Val Glu Arg Leu Tyr Gly Leu Ala Pro Val
            100                 105                 110
Cys Lys Phe Leu Val Lys Asn Glu Asp Gly Val Ser Ile Ala Ala Leu
        115                 120                 125
Asn Leu Met Asn Gln Asp Lys Ile Leu Met Glu Ser Trp Tyr Tyr Leu
    130                 135                 140
Lys Asp Ala Val Leu Glu Gly Gly Ile Pro Phe Asn Lys Ala Tyr Gly
145                 150                 155                 160
Met Thr Ala Phe Glu Tyr His Gly Thr Asp Pro Arg Phe Asn Lys Ile
                165                 170                 175
Phe Asn Arg Gly Met Ser Asp His Ser Thr Ile Thr Met Lys Lys Ile
            180                 185                 190
Leu Glu Thr Tyr Lys Gly Phe Glu Gly Leu Glu Thr Val Val Asp Val
        195                 200                 205
Gly Gly Gly Thr Gly Ala Val Leu Ser Met Ile Val Ala Lys Tyr Pro
    210                 215                 220
Ser Met Lys Gly Ile Asn Phe Asp Arg Pro Asn Gly Leu Lys Thr Pro
225                 230                 235                 240
His Pro Phe Leu Val Ser Ser Thr Ser Glu Ala Thr Cys Ser Ser Ala
                245                 250                 255
Phe Gln Arg Glu Met Pro Phe Ser
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<210> 79
<211> 136
<212> PRT
<213> Eucalyptus grandis

<400> 79

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 1               5                  10                  15
Asp Ser Gly Lys Ser Thr Thr Thr Gly His Leu Ile Tyr Lys Leu Gly
            20                  25                  30
Gly Ile Asp Lys Arg Val Ile Glu Arg Phe Glu Lys Glu Ala Ala Glu
        35                  40                  45
Met Asn Lys Arg Ser Phe Lys Tyr Ala Trp Val Leu Asp Lys Leu Lys
    50                  55                  60
Ala Glu Arg Glu Arg Gly Ile Thr Ile Asp Ile Ala Leu Trp Lys Phe
65                  70                  75                  80
Glu Thr Thr Lys Tyr Tyr Cys Thr Val Ile Asp Ala Pro Gly His Arg
                85                  90                  95
Asp Phe Ile Lys Asn Met Ile Thr Gly Thr Ser Gln Ala Asp Cys Ala
            100                 105                 110
Val Leu Ile Ile Asp Ser Thr Thr Gly Gly Phe Glu Ala Gly Ile Ser
        115                 120                 125
Lys Asp Gly Gln Thr Arg Glu His
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<210> 80
<211> 229
<212> PRT
<213> Eucalyptus grandis

<400> 80
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Val Glu Ser Ser Asp Thr Ile Asp Asn Val Lys Ala Lys Ile Gln Asp
            20   25   30
Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys
        35   40   45
Gln Leu Glu Asp Gly Arg Thr Leu Ala Asp Tyr Asn Ile Gln Lys Glu
    50   55   60
Ser Thr Leu His Leu Val Leu Arg Leu Arg Gly Gly Met Gln Ile Phe
65   70   75   80
Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu Val Glu Ser Ser
                85   90   95
Asp Thr Ile Asp Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile
            100   105   110
Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys Gln Leu Glu Asp
        115   120   125
Gly Arg Thr Leu Ala Asp Tyr Asn Ile Gln Lys Glu Ser Thr Leu His
    130   135   140
Leu Val Leu Arg Leu Arg Gly Gly Met Gln Ile Phe Val Lys Thr Leu
145   150   155   160
Thr Gly Lys Thr Ile Thr Leu Glu Val Glu Ser Ser Asp Thr Ile Asp
                165   170   175
Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile Pro Pro Asp Gln
            180   185   190
Gln Arg Leu Ile Phe Ala Gly Lys Gln Leu Glu Asp Gly Arg Thr Leu
        195   200   205
Ala Asp Tyr Asn Ile Gln Lys Glu Ser Thr Leu His Leu Val Leu Arg
    210   215   220
Leu Arg Gly Gly Phe
225

<210> 81
<211> 345
<212> DNA
<213> Eucalyptus grandis

<400> 81
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atcaatttga aatctttgat agtaacaaaa ataatttag gtagtttatg tttttcatga 120
tataaacctt gaaagttaat gctactaaat tgttatatat atattaggca aattacaacc 180
ttaatgcaac agttaatgac gtgatactgt tcagattata gatacaatgg ttatccttga 240
atgaataaga agaagtccta agggcaagtg ctatgagctt gcacgactgc ttttgcgcca 300
tttttgttta ccagcccggg ccgtcgacca cgcgtgccct atagt 345

<210> 82
<211> 72
<212> DNA
<213> Eucalyptus grandis

<400> 82
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accgcgtggg cc 72

<210> 83
<211> 544
<212> DNA
<213> Eucalyptus grandis

<400> 83
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tatccaggag cgtttgtaca ctgggagtac agagcttctt gcgataccga aactaccctt 180
ggacgactgg ccttttttgcc tcgcgccccc tctctgagcc ggggcgcaat ttgtcccttt 240
cccagagcga agtgtcgatt ttgtccttcc acgaggcttt acctactccc atcgcccgag 300
ccccaagccc aggcccaaat gcctgttcct tgtggccctg ccaacattcc ctttgaaatt 360
aaaaaattaa aaaaaaactc tctgccaggc aaaagtaaag attaacacca ccaaaattta 420
taacaaattt atcattcatt aattttcgtt aaattttatt ttcaaattac tgagtcgaat 480
tacatgtata aattcacgga tgtatcggtt cgagatttta tcctctaatt atcattagtg 540
tatg 544

<210> 84
<211> 515
<212> DNA
<213> Eucalyptus grandis

<400> 84
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atttaccaca tcagagacaa aacaatgtct tttttgtatt ttctagtcac gtcaacatgc 180
aaaacaacgc cattttgcac tcaccttgcc ggaaaattgc cacgtcaaca atttggctag 240
agtggcgctt aagtgatcta ttttgctcca attttggcac ttaagtgtca ttttcctaaa 300
ttttagcact taaagtattc ctctatgtca agttttgaca cttggggtgt actttgtcca 360
atcataaacc gtataagttc actttaaaca aaaatggcgc aaaagcagtc gtgcaagctc 420
atagcacttg cccttaggac ttcttcttat tcattcaagg ataaccattg tatctataat 480
ctgaacagta tcacgtcatt aactgttgca ttaag 515

<210> 85
<211> 515
<212> DNA
<213> Eucalyptus grandis

<400> 85
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tatccaggag cgtttgtaca ctgggagtac agagcttctt gcgataccga aactaccctt 180
ggacgactgg ccttttttgcc tcgtgccccc tctctgagcc ggggcgcaat ttgtcccttt 240
cccagagcga agtgtcgatt ttgtccttcc acgaggcttt acctactccc atcgcccgag 300
ccccaagccc aggcccaaat gcctgttcct tgtggccctg ccaacattcc ctttgaaatt 360
aaaaaattaa aaaaaaactc tctgccaggc aaaagtaaag attaacacca ccaaaattta 420
taacaaattt atcattcatt aattttcgtt aaattttatt ttcaaattac tgagtcgaat 480
tacatgtata aattcacgga tgtatcggtt cgaga 515

<210> 86
<211> 782
<212> DNA
<213> Eucalyptus grandis

<400> 86
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ctcgacggcc tcgacacctc cgccattctc tccgagacca cctccggcgt cgccaagctc 180
atcggcaagc ccgaggccta tgtgatgatt gtgttgaagg ggtcagtccc catggctttt 240
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gatgtgaaca agaagctgag tgctgcaatt gcttcaatcc tcgaaaccaa gctgtccatc 360
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ct 782

<210> 87
<211> 115
<212> PRT
<213> Eucalyptus grandis

<400> 87
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Gly Lys Pro Glu Ala Tyr Val Met Ile Val Leu Lys Gly Ser Val Pro
35 40 45
Met Ala Phe Gly Gly Thr Glu Gln Pro Ala Ala Tyr Gly Glu Leu Val
50 55 60
Ser Ile Gly Gly Leu Asn Pro Asp Val Asn Lys Lys Leu Ser Ala Ala
65 70 75 80
Ile Ala Ser Ile Leu Glu Thr Lys Leu Ser Ile Pro Lys Ser Arg Phe
85 90 95
Phe Leu Lys Phe Tyr Asp Thr Lys Gly Ser Phe Phe Gly Trp Asn Gly
100 105 110
Ser Thr Phe
115

<210> 88
<211> 1521
<212> DNA
<213> Pinus radiata

<400> 88
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tgtcgaatac atcaagcaca tgaagaagca atttgtgcca taggctatct ttagcctcat 180
ggatgttaaa ataatttctt tctttccttc cttcttcttt cttacccacc aaaacacaaa 240
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tctttcactc tttaatttat attctacata agtacctaaa gaggctctcc gacaatcata 360
tgataccata aaagtaacct cgattagaga gcgcctctcc atacaatcat ttgattttcg 420
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<210> 89
<211> 2590
<212> DNA
<213> Eucalyptus grandis

<400> 89
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agctttgtgt tggatggtct tgacctctct caccctaaaa ggtagctcaa aagaatgaga 180
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<210> 90
<211> 1172
<212> DNA
<213> Eucalyptus grandis

<400> 90
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aaaggttgcc gaaggtccgg tgacctcagc tgacggccac ctacaccaaa tctagctcac 180
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<210> 91
<211> 446
<212> DNA
<213> Eucalyptus grandis

<400> 91
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ctcccttgaa gatctcctct tcatttcggg atttcctgcc ttcgccgcgc catttgaagt 420
tcttttctg agagaagaat ttagac 446

<210> 92
<211> 2119
<212> DNA
<213> Pinus radiata

<400> 92
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ctttcaatcc agctacccaa tgcggcgaaa ataacgctga ttggactggg ctacactgta 180
atcacaaatt cccttccgtt tagatttcaa ctcgttgacc tacgagtatt ttatcgattt 240
aaaattatac aaaaaattgt ggaatgtttt acataagcaa aacttaaata atgtaaatag 300
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aatgattaac cctgcttatg ctgtcagtac tgaactcact tccagagccc caaaaatctc 1380
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caggcgcatt gtgcatgtaa atcatttggt gatgcagaag ctagccggag tagagtctat 1980
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<211> 230
<212> DNA
<213> Pinus radiata

<400> 102
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tggtagcatt agcgattccc ttcaccaaat gaaccctttg ctggtgatga gtggacaacc 180
taaagttgtt tgctggtgat gagtggacaa ccagagtggg ggttggggaa 230

<210> 103
<211> 596
<212> DNA
<213> Eucalyptus grandis

<400> 103
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<211> 653
<212> DNA
<213> Eucalyptus grandis

<400> 104
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<210> 105
<211> 342
<212> DNA
<213> Eucalyptus grandis

<400> 105
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gttggaagaa accatcaatc aatctcctag ttaatgacag tc 342

<210> 106
<211> 342
<212> DNA
<213> Eucalyptus grandis

<400> 106
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<210> 107

<211> 948
<212> DNA
<213> Eucalyptus grandis

<400> 107
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<210> 108
<211> 362
<212> DNA
<213> Eucalyptus grandis

<400> 108
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<211> 326
<212> DNA
<213> Eucalyptus grandis

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cttgtccaca ataattaaat tcggta 326

<210> 110
<211> 296
<212> DNA
<213> Pinus radiata

<400> 110
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<210> 111
<211> 723

<212> DNA
<213> Pinus radiata

<400> 111
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<210> 112
<211> 1301
<212> DNA
<213> Pinus radiata

<400> 112
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<210> 113
<211> 3070
<212> DNA
<213> Eucalyptus grandis

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<211> 1227
<212> DNA
<213> Pinus radiata

<400> 114
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<210> 115
<211> 1169
<212> DNA
<213> Eucalyptus grandis

<400> 115
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<212> DNA
<213> Eucalyptus grandis

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<212> DNA
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<210> 130
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